VIRGINIA DROUGHT MONITORING TASK FORCE

Drought Status Report

March 17, 2011

Statewide precipitation for the current water year, October 1, 2010 to March 18, 2011 was in the below normal range (77% of normal) with all drought evaluation regions except the Big Sandy and New River regions reporting below normal precipitation. Normal precipitation is defined as the mean precipitation for a thirty year period of record. Precipitation greater than 85% and less than 115% of normal is considered to be in the normal range. Statewide precipitation is below the normal range (76%) for the calendar year. Appendix A contains precipitation tables for periods dating from January 1, 2010 through March 17, 2011 provided by the Climatology Office of the University of Virginia.

As of March 17, 2011 the National Weather Service Climate Prediction Center 6-10 day climatologic outlooks call for above normal precipitation for all but the southeastern part of the state and above normal temperatures for the western third of the Commonwealth. All other regions are predicted to have equal chances of below normal, normal and above normal temperatures and precipitation over the 6-10 day period. The 8-14 day outlooks call for calls for equal chances of below normal, normal and above normal precipitation for the entire Commonwealth, and equal chances of below normal, normal and above normal temperature for all but the eastern portion of the state which is predicted to have below normal temperature. The one month outlook calls for equal chances of below normal, normal and above normal precipitation and temperature for the entire Commonwealth. The three month outlook calls for equal chances of below normal, normal and above normal precipitation and temperature statewide.

The March 22, 2011 NOAA U.S. National Drought Monitor indicates "moderate drought" conditions exist in approximately 30% of the state, concentrated in the central portion of the Commonwealth, and "abnormally dry" drought conditions exist in approximately 33% of the Commonwealth. Only the western and northern parts of Virginia are reported as having no drought conditions (Appendix B). The Seasonal Drought Outlook for the United States from now through April 2011 forecasts "drought ongoing, some improvement" for the entire central portion of the Commonwealth, "drought to persist or intensify" for southeastern Virginia and "no drought posted or predicted" for the rest of the state. (Appendix D).

The Virginia Department of Health (VDH) reports that 5 systems are under voluntary water conservation requirements and 1 system is under mandatory water conservation requirements. Of the 38 systems listed in the VDH report, 7 are rated as having a "Better" overall water supply situation, none are rated as having a "Worse" overall water supply situation and all other systems are rated as being in a "Stable" situation (Appendix F).

Reports from the Climatology Office of the University of Virginia, the United States Geological Survey, the Virginia Department of Game and Inland Fisheries and the Virginia Department of Environmental Quality follow.

Report of the Climatology Office of the University of Virginia

March 22, 2011

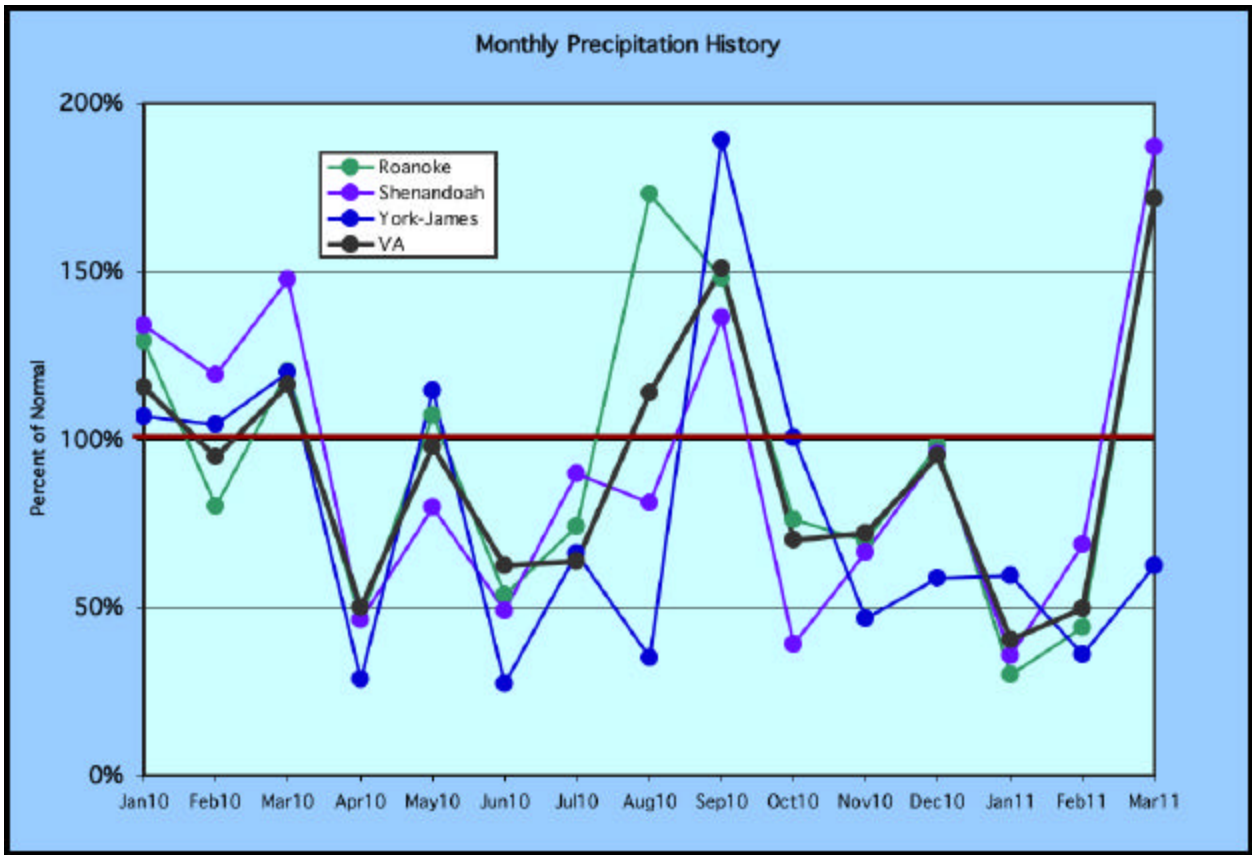
Heavy rainfall events in early March have meant well above normal rainfall for the period throughout the Commonwealth, with the exception of most locations in the Tidewater. Many areas have already topped their normal precipitation totals for the entire month.

Despite this welcome input of moisture, total precipitation for the critical cold portion of the year (starting in October) has been disappointing. It is always important for Virginia to build up its long-term moisture reserves during this period when temperatures, thus evaporation, rates are low and moisture has ample opportunity to penetrate deeper than the surface soil layers. Given the shortfall in moisture reserves at the end of the 2010 growing season, this has been all the more necessary this year.

This winter, although there have been an ample number of storms in the eastern U.S., they have tended to expend most of their moisture to our south or north. At this point, only the southwestern most two Drought Regions have received near normal precipitation since October began. Ten regions are at about 75% or less while parts of the Tidewater have barely reached 60% of normal.

The accompanying line chart shows the percent of normal precipitation by month, back to the start of 2010, for three representative regions along with the statewide average. Note that in all cases the number of months with values below the normal line greatly outweighs those above it.

With temperatures on the rise and the onset of the growing season approaching, there are not many weeks left during which significant gains in moisture reserves can likely be made. In addition to increases evaporation and water uptake by plants, warmer weather brings a shift in the processes by which we receive rainfall. Instead of the long-lasting widespread events such as have been seen early this month, thunderstorms will be the most likely water suppliers. Whether they pop up and wither or wend their way along in more organized lines, they tend to leave a patchwork of wet and dry locations with great differences in precipitation even within a given county.



United States Geological Survey
Streamflow and Ground Water Levels

Two significant precipitation events in the past two weeks have temporarily increased surface-water flows and groundwater levels at gages across the State. However, because of low antecedent soil moisture, increased air temperatures, and the beginning of plant leaf out, much of the potential groundwater recharge has been diverted to overcoming soil moisture deficit, evaporation, and transpiration.

Streamflow, which registered moderate increases from the storms, will decrease rapidly back to the below-normal levels observed before the storms. Streamflow at most gages in the State are currently recording discharges in the normal to above normal ranges (Appendix G). A few gages in the Chowan River Basis are recording below-normal discharges.

Water levels in approximately half the Climate Response wells across the State have risen as a result of the recent storms; however, the increases have been moderate with peaks occurring only a few days after the storms. Water levels in the other wells have shown little response to the storms. Groundwater levels at 12 of 19 wells are currently normal to above normal (Appendix H). Levels at the remaining seven wells are below normal for this time of year.

Virginia Department of Game and Inland Fisheries
Streamflow, Ground Water Levels, Boat Launches and Hatcheries

Short term stream flows leading into the spring spawning cycle for anadromous fish are currently very good due to recent rainfall events in the Chesapeake drainage. Trout stocking in the Western portions of the state is on schedule, and production flows at the hatcheries are good to excellent. With reservoir levels at normal seasonal levels all of the DGIF boat launching facilities are in operation. Current conditions will deteriorate rapidly if regular rainfall does not continue, as ground water levels are not adequate to maintain flows during periods of little precipitation. Flows in streams and rivers are falling to below median levels shortly after rainfall events.

Virginia Department of Environmental Quality
Conditions of Major Reservoirs

Levels of large reservoirs statewide are at or above normal levels. Four large multi-purpose reservoirs are identified as drought indicators in the *Virginia Drought Assessment and Response Plan* (Plan); Smith Mountain Lake, Lake Moomaw, Lake Anna and Kerr Reservoir. All four of these reservoirs are currently at levels above their Drought Watch stages. Below is a summary of large reservoir conditions:

- As of March 17, Lake Moomaw on the Jackson River is at 1581.99 feet, and is dropping at a rate of approximately 0.07 ft per day. Approximately 100% of conservation storage remains. Lake Moomaw is 16.99ft above the Drought Watch level (1565 feet MSL).
- As of March 17, Kerr Reservoir was approximately 6.08 ft above the Guide Curve and was anticipated to drop 1.45 ft by March 24, 2011. Drought Watch status is reached at greater than 3 ft below the Guide Curve.
- As of March 17, Smith Mountain Lake was at elevation 794.50 ft. The Drought Watch stage for Smith Mountain Lake is elevation 793 feet and below.
- As of March 17, Lake Anna was at elevation 250.1 ft (2.01 ft above drought watch). The Drought Watch stage for Lake Anna Lake is elevation 248 feet and below.

APPENDIX A

Precipitation Departures by Drought Evaluation Region

PRELIMINARY PRECIPITATION SUMMARY

Prepared: 3/18/11

	DROUGHT REGION	OBSERVED	Mar 1, 2011 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	4.72	2.33	2.39	202%
2	New River	4.93	2.01	2.92	245%
3	Roanoke	4.02	2.34	1.67	172%
4	Upper James	4.61	2.08	2.53	222%
5	Middle James	3.98	2.23	1.75	179%
6	Shenandoah	3.28	1.75	1.53	187%
7	Northern Virginia	3.82	2.01	1.82	190%
8	Northern Piedmont	4.39	2.09	2.30	210%
9	Chowan	2.86	2.40	0.46	119%
10	Northern Coastal Plain	2.80	2.35	0.45	119%
11	York-James	1.61	2.57	-0.97	62%
12	Southeast Virginia	1.95	2.30	-0.36	85%
13	Eastern Shore	1.86	2.36	-0.50	79%
	Statewide	3.81	2.22	1.59	172%

	DROUGHT REGION	OBSERVED	Feb 1, 2011 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	7.02	5.91	1.11	119%
2	New River	6.73	4.94	1.79	136%
3	Roanoke	5.48	5.65	-0.18	97%
4	Upper James	6.10	4.93	1.17	124%
5	Middle James	5.37	5.35	0.02	100%
6	Shenandoah	4.94	4.16	0.77	119%
7	Northern Virginia	5.71	4.68	1.03	122%
8	Northern Piedmont	5.71	5.06	0.65	113%
9	Chowan	4.04	5.57	-1.53	73%
10	Northern Coastal Plain	3.97	5.49	-1.52	72%
11	York-James	2.88	6.10	-3.22	47%
12	Southeast Virginia	3.56	5.80	-2.24	61%
13	Eastern Shore	3.31	5.55	-2.24	60%
	Statewide	5.36	5.35	0.01	100%

	DROUGHT REGION	OBSERVED	Jan 1, 2011 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	8.80	9.64	-0.84	91%
2	New River	7.65	8.15	-0.51	94%
3	Roanoke	6.65	9.57	-2.92	69%
4	Upper James	7.01	8.21	-1.20	85%
5	Middle James	6.91	9.01	-2.10	77%
6	Shenandoah	5.95	7.01	-1.06	85%
7	Northern Virginia	7.48	7.96	-0.48	94%

8	Northern Piedmont	7.19	8.58	-1.39	84%
9	Chowan	5.63	9.68	-4.04	58%
10	Northern Coastal Plain	5.53	9.24	-3.71	60%
11	York-James	5.34	10.24	-4.90	52%
12	Southeast Virginia	6.64	9.96	-3.32	67%
13	Eastern Shore	6.17	9.11	-2.94	68%
	Statewide	6.83	8.99	-2.15	76%

	DROUGHT REGION	OBSERVED	Dec 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	13.35	13.28	0.07	101%
2	New River	11.41	10.86	0.55	105%
3	Roanoke	9.84	12.82	-2.98	77%
4	Upper James	9.96	11.16	-1.20	89%
5	Middle James	9.60	12.18	-2.58	79%
6	Shenandoah	8.44	9.60	-1.17	88%
7	Northern Virginia	9.27	11.06	-1.79	84%
8	Northern Piedmont	9.72	11.86	-2.14	82%
9	Chowan	8.89	12.70	-3.81	70%
10	Northern Coastal Plain	7.25	12.52	-5.27	58%
11	York-James	7.33	13.63	-6.31	54%
12	Southeast Virginia	9.49	13.14	-3.66	72%
13	Eastern Shore	9.30	12.35	-3.05	75%
	Statewide	9.81	12.11	-2.30	81%

	DROUGHT REGION	OBSERVED	Nov 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	16.68	16.56	0.12	101%
2	New River	14.46	13.89	0.57	104%
3	Roanoke	12.19	16.18	-3.99	75%
4	Upper James	12.47	14.52	-2.05	86%
5	Middle James	11.93	15.69	-3.76	76%
6	Shenandoah	10.46	12.65	-2.19	83%
7	Northern Virginia	10.98	14.47	-3.49	76%
8	Northern Piedmont	12.00	15.66	-3.66	77%
9	Chowan	10.74	15.81	-5.07	68%
10	Northern Coastal Plain	9.27	15.66	-6.39	59%
11	York-James	8.90	17.00	-8.10	52%
12	Southeast Virginia	11.21	16.21	-5.01	69%
13	Eastern Shore	10.51	15.29	-4.79	69%
	Statewide	12.14	15.34	-3.20	79%

	DROUGHT REGION	OBSERVED	Oct 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	19.10	19.44	-0.35	98%
2	New River	16.39	17.06	-0.68	96%
3	Roanoke	15.01	19.89	-4.88	75%
4	Upper James	14.69	17.77	-3.08	83%
5	Middle James	14.67	19.53	-4.86	75%
6	Shenandoah	11.71	15.84	-4.14	74%
7	Northern Virginia	13.62	17.95	-4.32	76%
8	Northern Piedmont	14.29	19.65	-5.36	73%

9	Chowan	13.29	19.39	-6.10	69%
10	Northern Coastal Plain	11.97	19.17	-7.20	62%
11	York-James	12.45	20.53	-8.08	61%
12	Southeast Virginia	14.25	19.87	-5.62	72%
13	Eastern Shore	13.16	18.50	-5.35	71%
	Statewide	14.59	18.84	-4.25	77%

	DROUGHT REGION	OBSERVED	Sep 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	21.41	22.90	-1.49	93%
2	New River	20.34	20.47	-0.13	99%
3	Roanoke	21.27	24.12	-2.85	88%
4	Upper James	20.21	21.27	-1.06	95%
5	Middle James	20.78	23.66	-2.88	88%
6	Shenandoah	16.71	19.51	-2.81	86%
7	Northern Virginia	20.04	22.02	-1.98	91%
8	Northern Piedmont	20.58	23.93	-3.35	86%
9	Chowan	21.59	23.82	-2.23	91%
10	Northern Coastal Plain	19.65	23.26	-3.61	84%
11	York-James	21.72	25.43	-3.72	85%
12	Southeast Virginia	27.53	24.30	3.23	113%
13	Eastern Shore	17.72	22.11	-4.39	80%
	Statewide	20.63	22.84	-2.21	90%

	DROUGHT REGION	OBSERVED	Aug 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	26.54	26.73	-0.19	99%
2	New River	25.58	23.78	1.80	108%
3	Roanoke	27.70	27.84	-0.14	99%
4	Upper James	23.18	24.60	-1.41	94%
5	Middle James	24.96	27.48	-2.51	91%
6	Shenandoah	19.40	22.84	-3.44	85%
7	Northern Virginia	24.30	25.87	-1.56	94%
8	Northern Piedmont	23.99	27.75	-3.76	86%
9	Chowan	25.85	28.13	-2.27	92%
10	Northern Coastal Plain	23.99	27.12	-3.13	88%
11	York-James	23.42	30.30	-6.89	77%
12	Southeast Virginia	30.72	29.42	1.30	104%
13	Eastern Shore	22.50	25.98	-3.49	87%
	Statewide	24.99	26.67	-1.67	94%

	DROUGHT REGION	OBSERVED	Jul 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	30.27	31.21	-0.94	97%
2	New River	28.43	27.57	0.85	103%
3	Roanoke	30.96	32.23	-1.27	96%
4	Upper James	26.84	28.64	-1.80	94%
5	Middle James	26.83	31.89	-5.06	84%
6	Shenandoah	22.78	26.60	-3.82	86%
7	Northern Virginia	27.77	29.64	-1.87	94%
8	Northern Piedmont	26.32	32.15	-5.83	82%
9	Chowan	27.54	32.64	-5.10	84%

10	Northern Coastal Plain	25.45	31.57	-6.12	81%
11	York-James	26.78	35.40	-8.62	76%
12	Southeast Virginia	34.45	34.49	-0.04	100%
13	Eastern Shore	24.59	29.98	-5.40	82%
	Statewide	27.77	31.01	-3.24	90%

	DROUGHT REGION	OBSERVED	Jun 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	35.05	35.35	-0.30	99%
2	New River	30.99	31.42	-0.43	99%
3	Roanoke	33.04	36.12	-3.08	91%
4	Upper James	28.69	32.35	-3.66	89%
5	Middle James	28.70	35.40	-6.70	81%
6	Shenandoah	24.61	30.31	-5.70	81%
7	Northern Virginia	29.11	33.50	-4.39	87%
8	Northern Piedmont	28.73	36.16	-7.43	79%
9	Chowan	30.06	36.29	-6.23	83%
10	Northern Coastal Plain	27.46	35.13	-7.67	78%
11	York-James	27.71	38.81	-11.10	71%
12	Southeast Virginia	37.69	38.10	-0.42	99%
13	Eastern Shore	26.11	32.96	-6.85	79%
	Statewide	30.13	34.80	-4.66	87%

	DROUGHT REGION	OBSERVED	May 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	40.50	40.17	0.33	101%
2	New River	34.81	35.63	-0.83	98%
3	Roanoke	37.69	40.45	-2.76	93%
4	Upper James	32.50	36.63	-4.13	89%
5	Middle James	32.75	39.64	-6.89	83%
6	Shenandoah	27.67	34.15	-6.49	81%
7	Northern Virginia	33.75	37.84	-4.09	89%
8	Northern Piedmont	32.40	40.38	-7.98	80%
9	Chowan	35.48	40.38	-4.90	88%
10	Northern Coastal Plain	29.85	39.29	-9.43	76%
11	York-James	32.61	43.08	-10.47	76%
12	Southeast Virginia	41.89	41.96	-0.07	100%
13	Eastern Shore	28.23	36.48	-8.26	77%
	Statewide	34.30	39.06	-4.76	88%

	DROUGHT REGION	OBSERVED	Apr 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	43.19	43.93	-0.75	98%
2	New River	36.65	39.18	-2.53	94%
3	Roanoke	39.45	44.25	-4.80	89%
4	Upper James	34.20	40.03	-5.83	85%
5	Middle James	34.50	42.98	-8.48	80%
6	Shenandoah	29.02	37.07	-8.05	78%
7	Northern Virginia	35.34	41.14	-5.79	86%
8	Northern Piedmont	33.93	43.67	-9.74	78%
9	Chowan	36.92	43.81	-6.89	84%
10	Northern Coastal Plain	31.45	42.38	-10.93	74%

11	York-James	33.56	46.38	-12.82	72%
12	Southeast Virginia	43.08	45.21	-2.13	95%
13	Eastern Shore	29.41	39.40	-10.00	75%
	Statewide	36.01	42.48	-6.46	85%

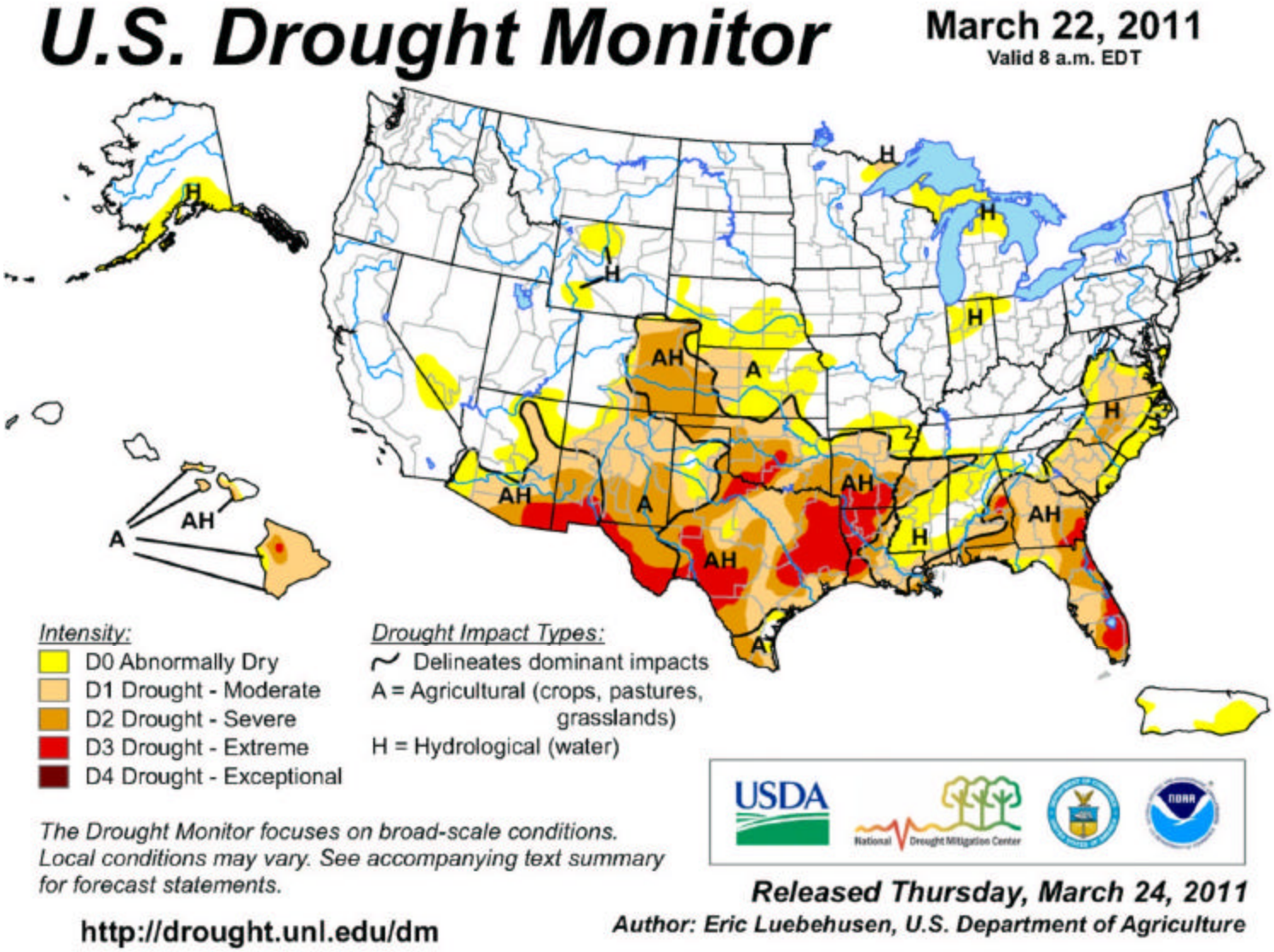
	DROUGHT REGION	OBSERVED	Mar 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	46.06	48.18	-2.12	96%
2	New River	40.72	42.85	-2.14	95%
3	Roanoke	44.58	48.52	-3.94	92%
4	Upper James	38.30	43.82	-5.52	87%
5	Middle James	39.64	47.04	-7.40	84%
6	Shenandoah	33.74	40.27	-6.54	84%
7	Northern Virginia	39.09	44.80	-5.71	87%
8	Northern Piedmont	38.85	47.48	-8.63	82%
9	Chowan	41.51	48.18	-6.67	86%
10	Northern Coastal Plain	37.60	46.66	-9.06	81%
11	York-James	39.17	51.07	-11.90	77%
12	Southeast Virginia	49.39	49.41	-0.03	100%
13	Eastern Shore	35.64	43.71	-8.08	82%
	Statewide	40.71	46.52	-5.81	88%

	DROUGHT REGION	OBSERVED	Feb 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	48.83	51.76	-2.93	94%
2	New River	43.14	45.78	-2.65	94%
3	Roanoke	47.23	51.83	-4.60	91%
4	Upper James	40.62	46.67	-6.05	87%
5	Middle James	42.86	50.16	-7.29	85%
6	Shenandoah	36.62	42.68	-6.07	86%
7	Northern Virginia	43.13	47.47	-4.34	91%
8	Northern Piedmont	41.38	50.45	-9.07	82%
9	Chowan	44.76	51.35	-6.59	87%
10	Northern Coastal Plain	40.89	49.80	-8.90	82%
11	York-James	42.86	54.60	-11.74	79%
12	Southeast Virginia	53.14	52.91	0.22	100%
13	Eastern Shore	39.52	46.90	-7.39	84%
	Statewide	43.68	49.65	-5.97	88%

	DROUGHT REGION	OBSERVED	Jan 1, 2010 NORMAL	- Mar 17, 2011 DEPARTURE	% OF NORM.
1	Big Sandy	53.06	55.49	-2.43	96%
2	New River	47.64	48.99	-1.35	97%
3	Roanoke	52.31	55.75	-3.45	94%
4	Upper James	44.94	49.95	-5.01	90%
5	Middle James	47.25	53.82	-6.57	88%
6	Shenandoah	40.43	45.53	-5.11	89%
7	Northern Virginia	45.83	50.75	-4.92	90%
8	Northern Piedmont	45.31	53.97	-8.66	84%
9	Chowan	48.78	55.46	-6.68	88%
10	Northern Coastal Plain	44.60	53.55	-8.95	83%
11	York-James	47.29	58.74	-11.45	81%

12	Southeast Virginia	57.46	57.07	0.38	101%
13	Eastern Shore	42.54	50.46	-7.93	84%
	Statewide	47.88	53.29	-5.40	90%

APPENDIX B


U.S. Drought Monitor
March 22, 2011
Valid 8 a.m. EDT
Intensity:
D0 Abnormally Dry
D1 Drought - Moderate
D2 Drought - Severe
D3 Drought - Extreme
D4 Drought - Exceptional
Drought Impact Types:
Delineates dominant impacts
A = Agricultural (crops, pastures, grasslands)
H = Hydrological (water)
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
http://drought.unl.edu/dm
USDA
National Drought Mitigation Center
Released Thursday, March 24, 2011
Author: Eric Luebehusen, U.S. Department of Agriculture

APPENDIX C

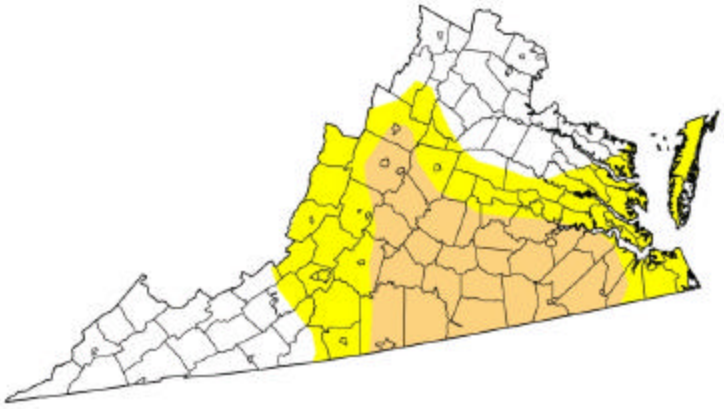
U.S. Drought Monitor

Virginia

March 22, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	36.47	63.53	30.46	0.00	0.00	0.00
Last Week (03/15/2011 map)	23.19	76.81	33.74	0.00	0.00	0.00
3 Months Ago (12/21/2010 map)	81.65	18.35	0.00	0.00	0.00	0.00
Start of Calendar Year (12/28/2010 map)	81.67	18.33	0.00	0.00	0.00	0.00
Start of Water Year (09/28/2010 map)	13.71	86.29	49.67	28.15	0.79	0.00
One Year Ago (03/16/2010 map)	100.00	0.00	0.00	0.00	0.00	0.00



Intensity:

- *D0 Abnormally Dry*
- *D1 Drought - Moderate*
- *D2 Drought - Severe*
- *D3 Drought - Extreme*
- *D4 Drought - Exceptional*

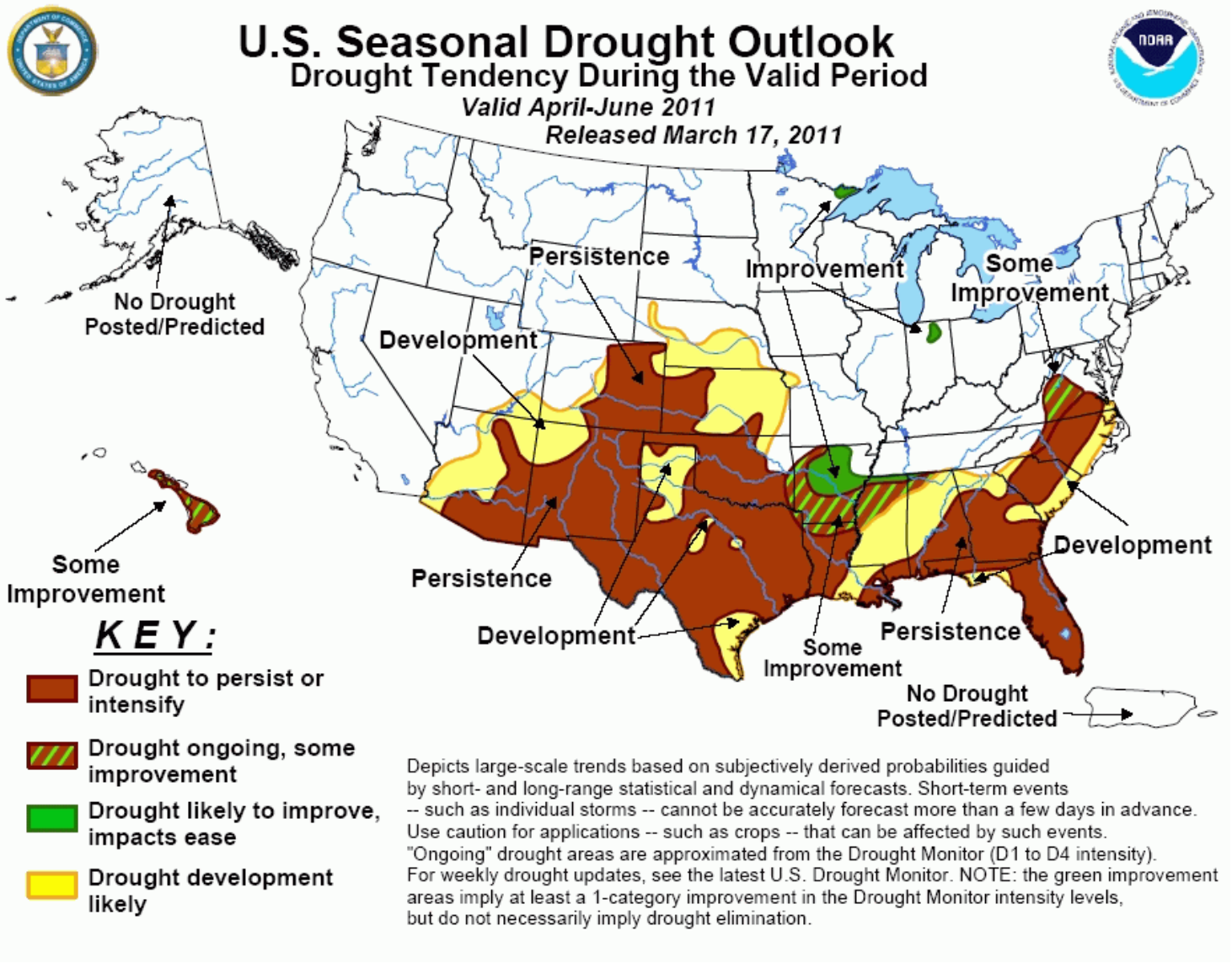
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, March 24, 2011

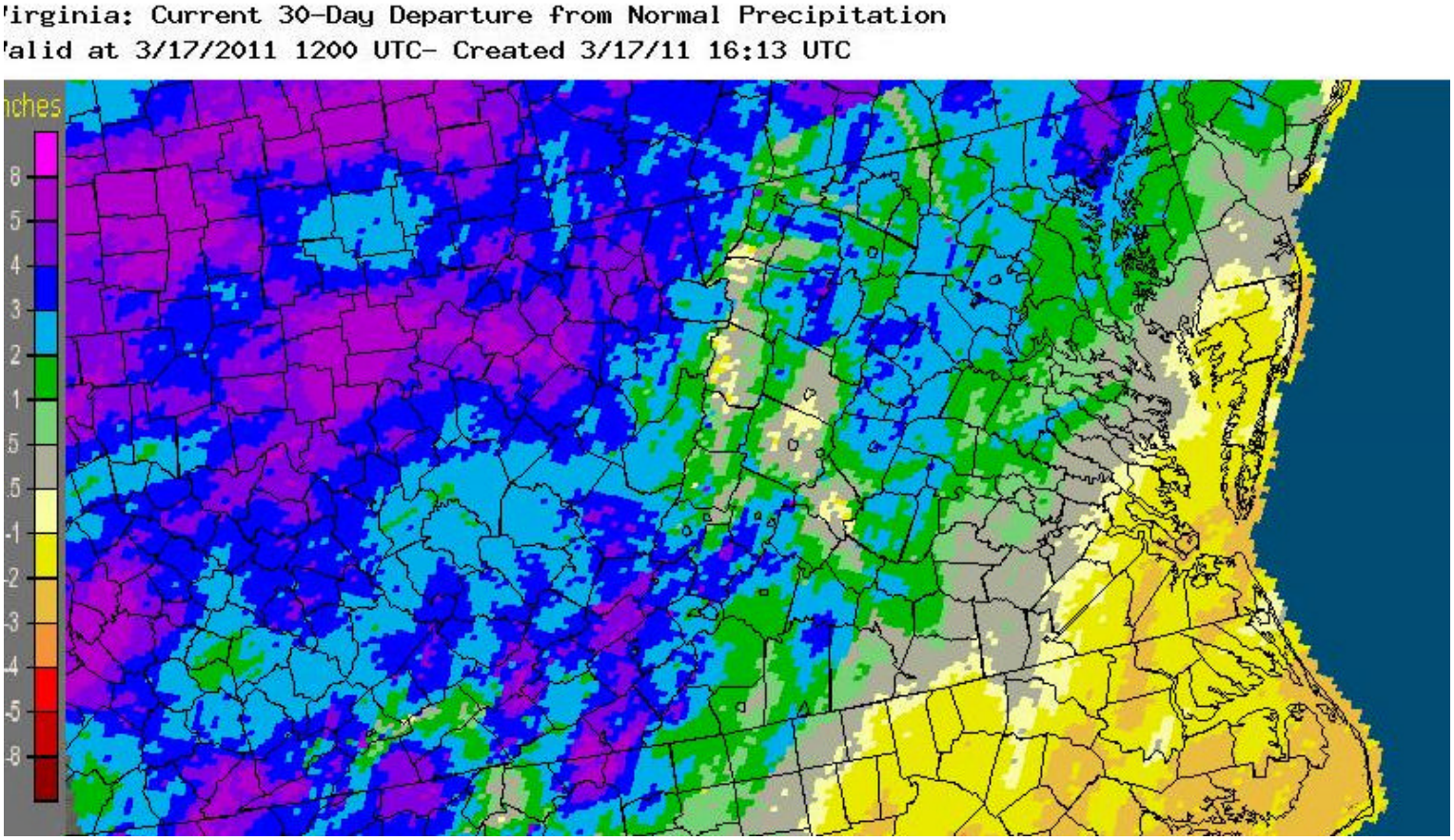
Eric Luebehusen, United States Department of Agriculture

APPENDIX D


U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid April-June 2011
Released March 17, 2011
No Drought
Posted/Predicted
Persistence
Improvement
Some
Improvement
Development
Some
Improvement
Persistence
Development
Development
Persistence
Some
Improvement
Persistence
No Drought
Posted/Predicted
KEY:
Drought to persist or intensify
Drought ongoing, some improvement
Drought likely to improve, impacts ease
Drought development likely
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

APPENDIX E

30-Day Departure from Normal Precipitation
Valid March 17, 2011



APPENDIX F
Condition of Public Water Supplies
March 16, 2010

ODW Drought Situation Report

Date: **3/16/11**

	Restriction totals	Population Totals
Mandatory	1	2,134
Voluntary	5	22,616
Total	**6**	24,750

N-None
M-Mandatory
V-Voluntary

B-Better
S-Stable/Same
W-Worse

PWSID	Waterworks	Source Name	Restrictions	Situation	Population Served
3053280	DCWA Central (Dinwiddie County)	Appomattox River Water Authority (ARWA)	N	**S**- 3/14/2011 - Conservation encouraged, but no formal voluntary restrictions in place.	6,800
3081550	GCWSA - Jarratt	Nottoway River	N	**S** - 03/14/2011 - River level sufficient to allow plant operation at 1.9 mgd. Gage at Stony Creek indicates 5.39 feet.	7,190
3149700	Puddledock Road	ARWA	N	**S-** 3/14/2011 - Conservation encouraged, but no formal voluntary restrictions in place.	9,723
3550051	Chesapeake	Northwest River, City of Norfolk Raw Water (Lake Gaston)	N	**S** -03/15/2011 Total rainfall for March is 1.55 inches. There are no water restrictions in Chesapeake. Chlorides are used as an indicator of drought, the higher the levels the more concentrated the contaminant in a lesser amount of	104,722

				surface water. They remain low at 36 mg/l. Continuing to purchase raw water from Norfolk (7.0 MGD average). The NWR WTP has been off-line during the month due to repairs.	
3570150	Colonial Heights	ARWA	N	**S**- 3/14/2011 - ARWA lifted restrictions as of 11/5/10. Conservation encouraged, no formal restrictions in place.	17,286
3595250	Emporia	Meherrin River	N	**S** - 03/14/2011 - Reservoir level sufficient for normal operation.	5,600
3670800	Virginia-American Water Company (Hopewell)	Appomattox & James Rivers	N	**S** - 03/14/2011 - Level at intakes sufficient to supply plant. MIB (taste & odor) detected in raw water and finished water.	28000 - Primary / 45463 Total including Consecutive System (Ft. Lee)
3700500	Newport News	Chickahomony River, Skiffs Creek, Diascand, Little Creek, Harwoods Mill, Lee Hall	N	**B -** 3/14/11 * Reservoir Status: 97.1 % Full * 34.3 Million Gallons Delivered	414,000
3710100	Norfolk	Lake Prince, Lake Burnt Mills, Western Branch reservoir, Nottoway River, Blackwater River, 4 western wells; Little Creek reservoir, Lakes Smith, Lawson, Whitehurst, and Wright. Lake Gaston.	N	**S** - As of 03/07/11, reservoirs at 90.2% (up from 89.1% on 01/31/11). Historic reservoir capacity is 94.7% at this time of year. Avg. pumping from Lake Gaston = 40.8 MGD. Total Reservoir Storage = 13,719 MG.	261,250 - Primary / 755,617 - Total including consecutive systems (Va Beach + military bases).
3730750	Petersburg	ARWA	N	**S** - 3/16/2011 - Mandatory restrictions lifted as of 11/09/2010.	33,740

3740600	Portsmouth	Lakes Cohoon, Meade, Kilby, and Speights Run	N	**S** - As of 03/04/11, reservoirs at 100% (from 100% on 02/04/11). Median reservoir capacity is 100% for the month and historical average capacity is 98% (period of 1969-2008). The emergency wells are OFF.	100,400 - Primary / 120,400 Total including consecutive systems (military bases)
3800805	Suffolk	Lone Star Lakes, Cumps Mill Pond	N	**B** -03/15/2011-Will follow Portsmouth's lead and the region as far as conservation. Received 0.7 inches of rain from 03/7/2011 through 03/13/2011. Average reservoir levels : Southern Lakes at 90.63% capacity, for the Northern Lakes at 103.53% and Crumps Mill Pond at 69.05% . No conservation measures implemented at this time but will continue to monitor.	66,631
3830850	Williamsburg	Waller Mill Reservoir	N	**B -** 3/14/11: 7.25" above primary spillway - about 96% of usable capacity.	16,400
4041035	APPOMATTOX RIVER WATER AUTHORITY	Surface water; Lake Chesdin	N	B- Wholesaler to Chesterfield County, Prince George County, Dinwiddie County; Cities of Petersburg and Colonial Heights. All restrictions have been lifted. The reservoir is full.	**200,000**

4041845	CHESTERFIELD CO CENTRAL WATER SYSTEM	Surface water; Swift Creek reservoir; purchases finished water	N	B- Purchases water from the City of Richmond and the Appomattox River Water Authority. All restrictions have been lifted. The reservoir is full.	286,000
4057800	TAPPAHANNOCK, TOWN OF	Groundwater wells	N	**S**	2,100
4073311	GLOUCESTER CO WATER TREATMENT PLT	Surface water, Beaverdam reservoir; 2 deep groundwater wells	N	**S-**Reservoir is full.	12,000
4075283	EASTERN GOOCHLAND CENTRAL WATER SYSTEM	Purchased surface water	V	**S-**purchases water from Henrico County	2,500
4075735	JAMES RIVER CORRECTIONAL CTR	Surface water; James River	N	**S-** Conservation at all DOC facilities	9,300
4085398	HANOVER SUBURBAN WATER SYSTEM	Surface water; North Anna River; some groundwater wells; purchases finished water	N	**S (see Richmond)**	71,000
4085770	SPRING MEADOWS-MEADOW GATE	Groundwater wells	N	**S**	2,300
4087125	HENRICO COUNTY WATER SYSTEM	Surface water; James River	N	**S (see Richmond)**	289,000
4101900	WEST POINT, TOWN OF	Groundwater wells	N	**S**	3,000
4127110	DELMARVA PROPERTIES	Groundwater wells	N	**S-**New Kent Co. encourages conservation at all county owned waterworks.	7,700
4145675	POWHATAN COURTHOUSE	Groundwater wells	N	**S**	2,600
4193280	COLONIAL BEACH, TOWN OF	Groundwater wells	N	**S**	3,300
4760100	RICHMOND, CITY OF	Surface water; James River	N	**S**- water levels do not affect intake; James River Regional Flow Management Plan set restrictions based on James River level for counties of Henrico, Chesterfield, Goochland, and Hanover counties,	197,000

				which purchase water from the City.	
6047500	Town of Culpeper	Surface water - Lake Pelham	N	S - Lake Pelham level was 6" above overflow invert on 3/13/11.	14,200
6059501	Fairfax Water	Surface Water - Potomac River and Occoquan Reservoir	N	S - 3/16/11 - Potomac River is flowing at about 24,000 cuft/sec, which is safely above the watch level. Occoquan Reservoir is full.	823,216 primary 1.8MM total
6061200	Marshall	Groundwater	**M**	**S** - The WSA Alert Messaging Service maintains the Water Use Restriction Notice as of 3/14/2011. The mandatory water use restriction is not directly drought related but depends on water source development.	2,134
6061600	Town of Warrenton	Surface (Cedar Run) and groundwater	V	S-On Tuesday March 15,Warrenton Reservoir surface was at 445.8 ft vs full level of 445.3 ft.	11,160
6107150	Town of Hamilton	Groundwater	V	**B** - 3/16/11 Voluntary water use restrictions initiated 7/6/2010 anticipated to be lifted in the near future. No supply problems.	2,000
6107300	Town of Leesburg	Surface Water - Potomac River	N	S - 3/16/11 - Potomac River is flowing at about 24000 cuft/sec, which is safely above the watch level.	46,300

6107600	Town of Purcellville	Surfce water/groundwater	V	S - 3/16/11 - Surface water reservoir is full and is overflowing. Voluntary water conservation initiated 7/2/10. No water supply problems.	6,300
6107650	Town of Round Hill	Groundwater	V	S - 3/16/11 - Voluntary water use restrictions replaced mandatory on 10/21/10. No problems.	3,156
6137500	Town of Orange	Surface: Rapidan River	N	S - 14-day average of Rapidan River flow was 4048 cfs on 3/15/11.	4,500
6137999	Wilderness	Surface - Rapidan River	N	S	11,331
6600100	City of Fairfax	Surface Water	N	B - 3/16/11 Goose Creek flow has been sufficient. Beaver Dam Reservoir is full.	24,000

APPENDIX G

USGS Streamflow Conditions for March 16, 2011

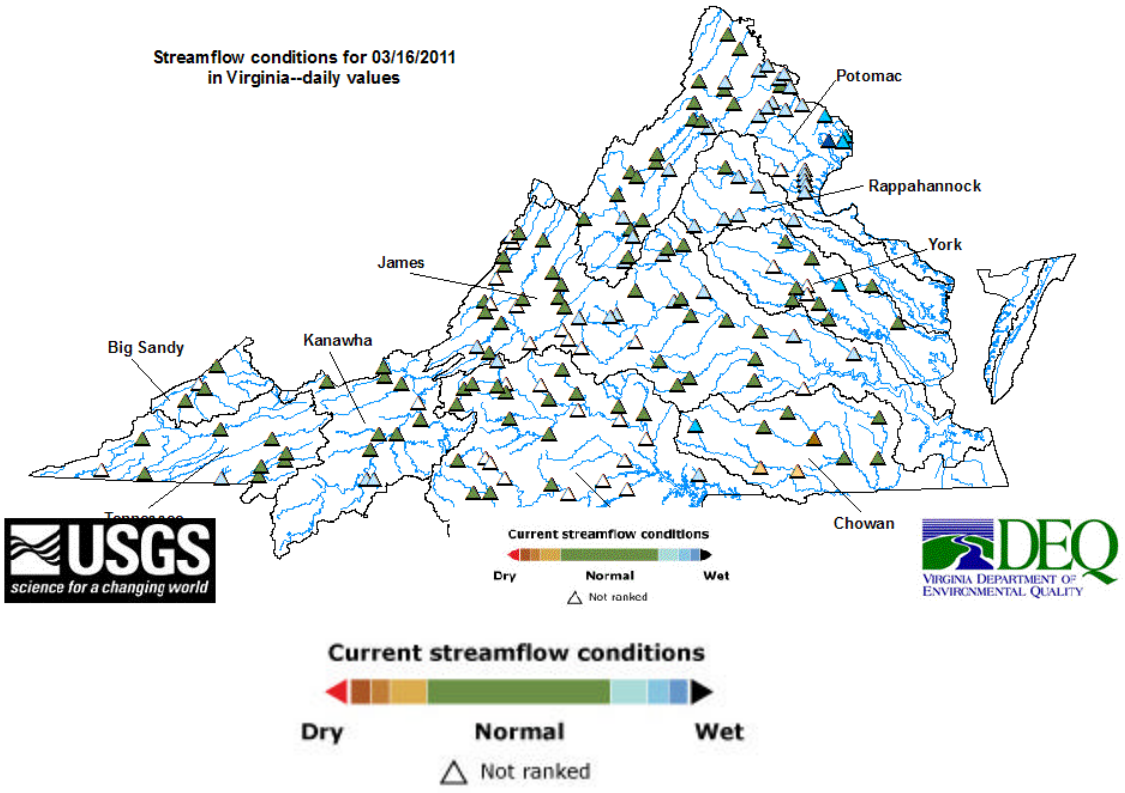
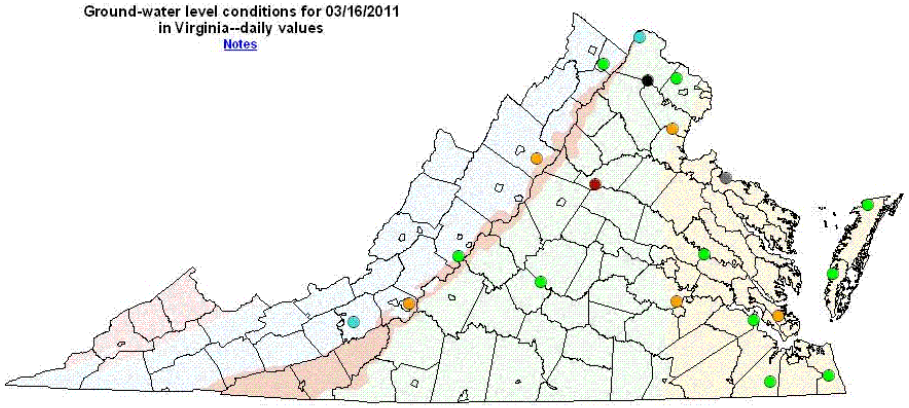


Figure 1. Streamflow conditions in Virginia for March 16, 2011

APPENDIX H

Groundwater level conditions for in Virginia March 16, 2011



Explanation - Percentile classes (symbol color based on most recent daily value.)
New Low
<5
5-10
10-24
25-75
76-90
90-95
>95
New High
Not Ranked
Well Below Normal
Below Normal
Normal
Above Normal
Well Above Normal

Figure 2. Groundwater-level conditions in Virginia for March 16, 2011